

**POST IMPLEMENTATION EVALUATION REPORT**  
**for the**  
**Management Information System / Decision Support System**  
**(MIS/DSS)**  
**Project 4260-138**  
**Department of Health Services (DHS)**

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### A. JULY 18, 2003 LETTER FROM DEPARTMENT OF FINANCE

RE: PIER FOR THE DHS MIS/DSS (PROJECT NUMBER 460-138)

### B. PIER ECONOMIC ANALYSIS WORKSHEETS

DATED: FEBRUARY 1, 2005

### C. MIS/DSS INDEPENDENT ASSESSMENT REPORT

ISSUED: AUGUST 11, 2004



## PREFACE

This document presents the findings from the post implementation evaluation of the Management Information System Decision Support System (MIS/DSS) Project (Project Number 4260-138). The project was originally called the Managed Care Data Systems project, as described in Feasibility Study Report (FSR) 4260-138 submitted September 1994. The Department of Finance (DOF), in a letter dated December 29, 1994, approved the project.

Three Special Project Reports (SPR) were required during this project:

- The first SPR was submitted in October 1995 as a requirement of the FSR approval, to detail the system design for the project. This SPR expanded the scope of the project to include fee-for-service (FFS) records, making this the only system to contain both managed care and FFS.
- The second SPR, submitted to the Department of Information Technology (DOIT) in December 1996, was required to address the funding needed for the final bid cost at the end of the competitive procurement.
- The third SPR, submitted May 28, 1999, was required to improve the quality of the data input to the system, the greatest risk to this project; and for additional contract cost increases. This SPR included several data quality enhancements aimed at improving the monthly data-feed files that serve as inputs into the MIS/DSS operation. Significant progress has been accomplished on these data-feed improvements, with the completion of seven Statistical Process Control (SPC) reports and the de-duplication process for encounter data from the Managed Care Plans and the County Organized Health Systems (COHS). Additionally, automated edits of data submitted by the COHS have been developed and moved into production. However, work continues on the improvements impacting the standard formats and edits of other data files obtained from the various sources, such as Short-Doyle Medi-Cal.

An Advanced Planning Document (APD) was prepared to request enhanced federal funding for the MIS/DSS. On May 8, 1996, the Health Care Financing Administration (HCFA), currently known as Centers for Medicare and Medicaid Services (CMS), approved the initial APD. Two APD updates were submitted and approved in conjunction with the second and third SPRs mentioned above.

The MIS/DSS was implemented over five phases from April 1997 through July 2000. Final departmental approval was granted in October 2000. The system is fully operational, and is in a maintenance cycle. DHS submitted the first Post Implementation Evaluation Report (PIER) for this project in 2001. The DOF suspended review of that document, stating that it did not contain sufficient information to determine if the project had been



successful. A Revised PIER was submitted in 2003. DOF suspended review of the Revised PIER, and in a July 18, 2003 letter indicated that the Revised PIER did not fully meet reporting requirements, and that DHS must contract with a qualified vendor to conduct an independent assessment (IA) of the MIS/DSS and address specific DOF concerns which were enumerated in the letter (See Attachment A - July 18, 2003 Letter from DOF).

In June 2004, the DHS contracted with a qualified vendor to conduct an assessment of the MIS/DSS. The IA was conducted in eight weeks and the final report was issued August 11, 2004. The IA report is included as an attachment to this updated PIER. Based on the specific DOF concerns, the assessment and report focused on two key issues: 1) Did the MIS/DSS meet original business needs and goals, and was it successful enough to close the PIER for the original project? and 2) As the program has changed over the past seven years, does the MIS/DSS meet current business needs and user expectations? These two issues were addressed respectively, in the PIER View and Current View sections of the IA report.

Details from the PIER View section and applicable Attachments are referenced throughout this updated PIER document to clarify and provide specific details presented in the PIER.

The Current View section identifies various system, data, and organizational issues/problems that impact how well the MIS/DSS meets current business needs. In addition, this section details user suggestions obtained through surveys and interviews, for improvements and enhancements that would improve the match between the MIS/DSS and user expectations and current business needs. Our plan for corrective action is that these issues, suggestions for improvement, and other user input will be incorporated into the Requirements Definition phase for the procurement of a new MIS/DSS contract. These issues are discussed in more detail in the Planning – Advanced Planning Document (PAPD) which, per our previous agreement, will be submitted to DOF under separate cover, in lieu of a new FSR for the re-procurement of the MIS/DSS.

While the IA report indicates some barriers and issues related to the MIS/DSS and current business needs, the findings validate that the project met original scope, schedule and cost goals, and has produced verifiable value for DHS.

The findings from the assessment of the MIS/DSS reflect the following:

- A strong majority of the program requirements outlined in the FSR and subsequent SPRs have been met. The remaining requirements were met by other means and have not created material deficiencies that prevent DHS from managing Medi-Cal or gaining benefit from the MIS/DSS (See IA report "PIER Closure View -



Requirements Assessment”, page 19, and Attachment 3a – “Requirements Satisfaction Matrix”),

- The project had very good performance to overall schedule goals (See IA report “PIER Closure View Section - Schedule Performance”, page 21),
- The MIS/DSS project was implemented \$99,000 under budget, and has shown a positive return on investment (ROI) for the State (See IA report “PIER Closure View – Cost Summary”, page 23; and “PIER Closure View - ROI Performance”, page 25).

The MIS/DSS data warehouse’s relational database contains approximately 2.5 billion records, and is updated on a monthly basis. In addition, two aggregate- level databases: Panorama View (MIS) and Performance Measurement Workstation (Managed Care Health Plan Employer Data and Information Set (HEDIS) performance measurement database) are in maintenance mode. All three databases are operational and available to users for interactive analysis.

Since the beginning of the project in 1997, over 400 staff have been trained on the system and have had numerous success stories based on their use of the MIS/DSS. These successes would not have been possible without the unique analysis of Medi-Cal data afforded by the MIS/DSS. The MIS/DSS is a decision support system and is unlike a transactions system with routine, scheduled processing and reporting. The decision support system is used for a variety of queries, and for both point-in-time and longitudinal studies. For example, MIS/DSS users query the MIS/DSS to identify trends in expenditures, utilization and/or practice patterns; to monitor and track program statistics and outcomes; to estimate the impact of proposed policy changes; to respond to external inquiries; and to provide data for legislative and federal reporting, etc. These types of activities are, for the most part, not scheduled or routine; but rather, are completed in response to specific, ad-hoc requests. By its nature, the frequency of use in a decision support system is dynamic and is not easily predictable.

Business needs associated with the newly expanding Managed Care Program were the primary impetus for the MIS/DSS (See IA report – “Table 8: Business Needs by Organization”, page 38). However, as is demonstrated in “Table 9: Business Use & Systems User By Division”, pages 39-40 of the IA report, other functional areas, not originally targeted for system use, have found benefit from the MIS/DSS and are incorporating reports, analyses, and savings initiatives based on the MIS/DSS into their routine operations. While the decision support system has far greater potential than is demonstrated by the current type and frequency of MIS/DSS use, reliance on the MIS/DSS for day-to-day and ad-hoc use has expanded to other Medi-Cal units in Payment Systems Division (PSD), and Medi-Cal Policy Division (MCPD). In addition, DHS’ Audits and Investigations (A&I) considers this system to be critical in its program integrity and anti-fraud activities.



# 1 OVERVIEW

## 1.1 BACKGROUND STATEMENT

Over the past several years, DHS has increased its commitment to the large-scale expansion of managed care within Medi-Cal. The primary aim of this expansion is to improve recipient access to quality, preventive and primary health care services in a cost-effective manner. This commitment was the result of 1992 legislation (Senate Bill 485), which required Medi-Cal to place an "emphasis on efforts to arrange and encourage access to health care through enrollment in organized, Managed Care Plans of the type available to the general public." The expansion of managed care created a need for the availability of significantly enhanced information about the Medi-Cal program. The mandate to initiate the MIS/DSS came from Chapter 294, Section 78, of the Budget Trailer Bill, Senate Bill 391 of 1997.

### **Feasibility Study Report**

On September 13, 1994, the DHS prepared and submitted a FSR to DOF to implement an integrated information system for the expanding Managed Care Program. This FSR was in support of the Governor's initiative for Managed Care, which was aimed at moving more than half of the Medi-Cal eligible population from FFS to managed care coverage.

Over the next three years, approximately three million Medi-Cal beneficiaries would be enrolled in health care plans under which managed care contractors, instead of the current FFS system, would provide health care services. These beneficiaries would receive services through approximately 60 health plans (contractors) and several thousand direct-care providers. The DHS Strategic Plan stated that the Managed Care Plans would be required to submit encounter and patient-specific data to DHS. Providing the ability to accept line-level details in the form of managed care encounter records, required major information technology development, and modifications to existing Medi-Cal data systems.

The Strategic Plan also indicated that the DHS would monitor and require additional data regarding:

- Patient satisfaction
- Cultural and linguistic competence
- Quality measures
- Provider satisfaction
- Health status
- Health outcomes



- Clinical preventive services

Many of the additional data and metrics for the performance areas in the above list were later defined to be within the scope of the Managed Care External Quality Review Organization (EQRO) contract.

The major information system elements of the FSR were:

- To provide the Medi-Cal Managed Care Division (MMCD) information necessary to (1) monitor the program and ensure that recipients of Medi-Cal have access to, and receive quality health care services; (2) control health care costs; (3) evaluate the effectiveness of various managed care systems and compare managed care service delivery against FFS delivery; and (4) ensure contractual and regulatory compliance of Managed Care Plans.
- To operate on the existing departmental client/server technology connected to the Health and Welfare Data Center (HWDC) (currently known as the Health and Human Services Data Center (HHSDC)).
- To procure the services of a contractor to design the data integration and analytical software; develop required quality assurance modules; assist DHS in the development of new feeder databases; provide training; and complete periodic software updates as required.
- To utilize DHS information technology (IT) staff for development and maintenance of the feeder databases and maintenance of the operating system.

DOF approved the FSR for this project on December 29, 1994, but required DHS to submit a SPR by October 1, 1995, with a detailed description of the final MIS design and updated project Economic Analysis.

### **Special Project Reports**

DHS submitted three SPRs for the MIS/DSS project. The first SPR was submitted on October 10, 1995, in response to the DOF reporting requirements and to identify additional changes in the project since December 1994. In addition to changing the title of the project to the "Management Information System/Decision Support System", several significant changes were described in the SPR:

- The scope of the project was expanded to include a decision support component for a large portion of the Medi-cal program that will remain FFS.
- Expanded and improved project management of the system by elevating the reporting level of the project manager, establishing an



executive-level steering committee, and increasing user-level involvement in the project.

- The project schedule had slipped, delaying all major milestones by at least 10 - 11 months.

This SPR was approved by DOIT on January 9, 1996.

On December 19, 1996, DHS submitted a second SPR requesting approval to continue development and implementation of the MIS/DSS and to award a contract, which represented a significant increase in previously approved project costs. The primary reasons for the increase from the original approved project costs are as follows:

- The number of data records involved in the project increased from 187 to 525 million as a result of the inclusion of FFS and all reference files in the database.
- The number of sources of data increased significantly with the Department's understanding of the resulting complexities of the proposed system.
- Other states' experiences with similar projects led to the inclusion of specific contractor responsibilities to ensure the completion of the project according to expectations.
- Certain project costs, such as program staff and the local area network (LAN) for acceptance testing were not included in the original project costs.

On February 14, 1997, the second SPR was approved subject to an increase in the level of independent oversight on the project to include overseeing system design, implementation, and overall project management; and affording an opportunity for DOIT to review and comment on the project oversight contract.

On May 28, 1999, DHS submitted the third and final SPR for this project, requesting an increase in funding authority and approval of a Data Quality Initiative for the MIS/DSS. The funding increase was a result of increased HHSDC and User Help Desk costs. The Data Quality Initiative incorporated several activities aimed at improving problems with the accuracy, completeness, and timeliness of the data feeding the MIS/DSS databases. The problems were a result of the size and number of sources of data included in the MIS/DSS input files. The following activities were initiated to eliminate or reduce these problems:

- De-duplication of managed care and COHS records in the data feeds.
- Creation of Statistical Process Control (SPC) reports to monitor the data volume and reliability of reporting by COHS, and Managed Care Plans.



- Development of automated edits for the data not currently subject to review (e.g., COHS records).
- Standardize and automate, to the extent possible, data formats and layouts for other input files obtained from various sources (e.g., Short-Doyle Medi-Cal).

This SPR was approved by DOIT on May 18, 2000.



## 1.2 PROBLEM STATEMENT

In order to assure the success of the managed care expansion program, the Department needed to develop a system which would provide MMCD staff with data to use in monitoring the performance of managed care contractors in order to assure that plan members have access to quality health care on a timely basis, and to support correction of identified problems.

The only data system available for use by Medi-Cal staff, prior to the development of the MIS/DSS, was designed for a FFS system and not for a managed care health delivery system. The California Medicaid Management Information System (CA-MMIS) collects payment data and demographic information about the Medi-Cal FFS population, but does not collect patient/provider encounter information, which is required to effectively monitor all of the individual health plan activities. CA-MMIS does not integrate managed care data, or data from other programs such as Child Health and Disability Prevention (CHDP) Department of Developmental Services (DDS), Short Doyle Medi-Cal, etc.; there are no reports generated from CA-MMIS that indicate problems or contractor practice patterns; there is no way to organize CA-MMIS data so that contract managers would be able to compare plans or plan types; nor is there the ability to create ad-hoc reports to research special problems related to managed care delivery, as issues are identified.

Under a managed care health delivery system, appropriate information must not only be collected, it must also be available to contract managers on an ongoing basis to help them identify and correct problems. Additionally, a data system designed for a Managed Care Program model would assist audit staff in planning areas of special review before beginning an audit engagement.



### 1.3 OBJECTIVES STATEMENT

The FSR identified the objectives of the Managed Care MIS as a system to support the Managed Care Program to reach the following program objectives:

1. Assuring quality health care services are provided to Medi-Cal recipients by contracting Managed Care Plans.
2. Assuring access to health care services for Medi-Cal recipients in Managed Care Plans.
3. Controlling the costs of health care through a managed care approach.
4. Evaluating the effectiveness of the Managed Care Program and evaluating different modes of managed care delivery.
5. Assuring regulatory and contractual compliance of contracting Managed Care Plans.



#### 1.4 PROPOSED ALTERNATIVE

To support the administration of the Managed Care Program, a management information/decision support system was proposed. This system would provide information for program management and evaluation, and for contractor oversight and monitoring – including, performance measures pertaining to access to services and timely delivery of quality health care.

The Proposed Alternative in the FSR called for a competitive procurement of software through a RFP, which would require a fixed price for software and support of a system that would meet the stated objectives.

The proposed solution would integrate data from the following databases covering all Medi-Cal Managed Care Plans, including:

- Enrollment/eligibility
- Encounter/claims
- Financial
- Provider
- Patient satisfaction

The State would provide the data to feed into the system. The State and contractor would clean the data through edit processes before it was used to build the integrated database. Contractor analytical software would be provided for users to access both the summary MIS database, and the more detailed decision support system (DSS) database. Other contractor software would prepare routine hardcopy reports. Software would be installed at HHSDC and on user desktop computer networks. The contractor would provide on-site technical assistance to users for at least three months to assist in the analytical use and interpretation of data.

The vendor would be responsible for the detailed design and implementation of the system, including needed hardware and software necessary to build, update and run the system. In addition, the vendor would provide software necessary to create reports and system query software. The software and resulting database would be the property of the State.



## 2 Project Description

### 2.1 HOW PROGRAM OBJECTIVES WERE MET

Providing the information necessary to support the Managed Care Program objectives was realized by developing a data warehouse with readily available data through automated sources, enabling staff to perform regulatory oversight of managed care contractors, in a timely manner.

The MEDSTAT Group's (MEDSTAT) proposed MIS/DSS was deemed to be the solution to the needs detailed in the Background, Problem, and Objectives above. This system includes a data warehouse that integrates Medi-Cal managed care encounter records and fee-for-service claims to provide comprehensive information about the access and utilization of services for program eligibles. On April 17, 1997, after an extensive competitive procurement, the MIS/DSS contract was awarded to MEDSTAT. DHS also contracted with Logicon, as the Independent Verification and Validation (IV&V) contractor for the project, on April 7, 1997

The MEDSTAT proposal was deemed to be the Best Value for the State because of its significantly lower cost, and design which proposed the construction and use of one, integrated database for all of the applications. The IA report details the MIS/DSS system design in the "Current View - System Design", pages 29-03, and in Attachment 5a – "System Architecture".

The MIS/DSS was configured to support different levels and types of users. The summary-level MIS database is licensed for up to 200 users. Additionally, up to 75 of these users are also licensed for the DSS database. This level of access was deemed adequate since use of the detailed DSS database would primarily be by "power users" such as actuaries, rate developers, policy analysts and statisticians. Since 1997, because of staff turnover and re-assignments, 290 staff have been trained on the MIS, and 126 have been trained on the DSS components of the system.

The implementation plan identified the roles and responsibilities of the organizations involved in this project. MEDSTAT would operate the system under contract. DHS' Information Technology Services Division (ITSD) (formerly known as Data Systems Branch), would provide data preparation for the MIS/DSS. HHSDC would provide hardware and software support, and Logicon would provide project oversight during system development.

The Background and Objectives in the FSR outline that the purpose of the MIS/DSS project was to establish a comprehensive information system to support the day-to-day program and contract management



needs of the Medi-Cal Program, and to significantly enhance the availability of Medi-Cal information to staff that monitor and oversee Medi-Cal services. As is detailed in the attached IA report (See “PIER Closure View”, pages 4, and 18- 28), these objectives were met through the MIS/DSS.

The MIS/DSS is a data warehouse of Medi-Cal eligibility, provider, service, and financial data. The MIS/DSS is the only repository in the State that integrates both FFS and managed care Medi-Cal data in one database. This system enables departmental staff to generate pre-formatted, standardized, and/or ad-hoc reports, and perform program analyses required to meet statutory and regulatory mandates to monitor Managed Care contracts and Health Plan performance. This integrated database, which is unique to the MIS/DSS, allows deeper levels of analysis since users can query across dimensions, and across functional boundaries such as eligibility and services/claims. This methodology fosters new insights which are not possible when data is isolated in separate, operational data stores. As a result, users are able to find new and unexpected uses for the data warehouse that were not anticipated in the original concept.

The system encourages the efficient and effective use of health care resources by supporting analyses that identify overlap and/or duplicative services. This data rich system also provides a summary view of the Medi-Cal Program for users outside of DHS, including DOF, Legislative Analyst’s Office (LAO), and the legislative committees with oversight responsibility for Medi-Cal.

The system affords users the ability to study the Medi-Cal data from many perspectives, which provides the groundwork for realizing the Managed Care Program objectives. It has also been used successfully in other program areas to control costs and monitor the provision of service.

Following are examples of how the FSR objectives were met through the MIS/DSS. In addition, the IA report details numerous examples obtained from user surveys and interviews, of various MIS/DSS reports and analyses used to support these objectives (See IA report, “Current View- Summary Observations”, pages 38- 41, and Attachment 4a – “End -user Survey Results”).

***Assuring quality health care services are provided to Medi-Cal recipients by contracting Managed Care Plans.***

Both the MIS and DSS components of the system offer numerous ways to monitor the quality of health care services provided by the Managed Care Plans. For example, the MIS contains a folder, designed specifically for analysis of quality of care issues. Reports from the “Quality” folder can be subset to look at services to beneficiaries by a specific plan, or type of plan (e.g., 2-Plan, COHS, etc.), by county, category of service, and/or



by demographic categories such as age, gender, ethnicity, primary language, etc.

The pre-formatted reports in the Quality folder include analyses of preventive care (e.g., well-child visits, childhood immunizations, and maternity care), and disease management (e.g., childhood diseases, and ambulatory sensitive condition management). The MIS also contains a "Utilization" folder. These pre-formatted reports can also be subset by the categories listed above, and show trends in utilization, geographic variations in utilization, utilization by category, and utilization by procedure. The summary database provides user-friendly, point-and-click access to specific statistics and trend information.

The DSS allows for detailed analysis of patterns of service utilization of program beneficiaries, by and across plan providers. This type of analysis provides a comprehensive review of all services provided to one or a group of plan enrollees by procedure, diagnosis, date of service, etc. This type of analysis is critical in identifying gaps in service that could negatively impact the quality of care.

The DSS also contains an Episodes table that group together inpatient, outpatient, and drug services related to a specifically diagnosed episode of care. Users can analyze patterns of care for a specific disease occurrence at a point-in-time, or conduct longitudinal studies using a Study Group feature in the DSS.

### ***Assuring access to health care services for Medi-Cal recipients in Managed Care Plans.***

One of the key goals of the Managed Care Program is to improve access to services for the Medi-Cal beneficiary. The MIS/DSS system provides for tracking and monitoring service locations, and access for the Medi-Cal population. The MIS contains a "Provider Access" folder with pre-formatted reports that show trends in provider participation, how participation varies geographically, access to acute care by geographic area, and ratio of recipients to providers.

In the DSS, tracking access is accomplished by geo-coding each beneficiary's zip code from eligibility records, and each provider service location zip code from the Medi-Cal provider master file and managed care provider network records. As a result, users can monitor where Managed Care Plan enrollees receive care, where clusters of providers/specialty providers are located, or where a shortage of providers/specialty providers exists in a county/region.

### ***Controlling the costs of health care through a managed care approach.***



The most effective means of controlling costs of health care in general, and through a managed care approach specifically, is through monitoring the utilization of services as listed above. Additionally, the MIS/DSS includes a separate “Capitation” table, which contains the capitation paid each Managed Care Plan based on the contracted rate and number of Medi-Cal beneficiaries enrolled in the particular plan. Access to this table is controlled and limited, as confidential rate information can be derived.

In addition, both the MIS and DSS contain expenditure data in many forms for FFS claims. Of particular benefit, are the “carved out” costs for managed care enrollees which are paid through FFS. This data is critical for cost containment initiatives and rate setting activities in Medi-Cal because they present the complete cost picture.

***Evaluating the effectiveness of the Managed Care Program and evaluating different modes of managed care delivery.***

Various modes of analysis are possible using the MIS/DSS to compare utilization, cost and outcome patterns by plan, and/or plan type (i.e. mode of delivery). For example, by a simple mouse click, users can subset on one or more Managed Care Health Plans, and/or FFS to analyze and compare practice patterns and trends. Users can also use this method to analyze and compare services by delivery type (i.e., 2-Plan, COHS, FFS, etc.).

Additionally, the MIS/DSS Briefing Book includes detailed Profile Reports for each plan and each plan type. These reports are updated annually.

***Assuring regulatory and contractual compliance of contracting Managed Care Plans.***

Data in the MIS/DSS allows for the assessment of plan-specific utilization statistics by sub-categories such as number, type and location of service. This information is an essential element in monitoring a Plan's compliance with contractual obligations. Detailed, plan-specific utilization reports from the MIS/DSS are provided to DHS Contract Managers on an ongoing basis, and to contracting Health Plans, in the form of the “Medical Director's Report” completed by MMCD on a semi-annual basis. These reports support the verification of the Health Plan's conformance to contractual performance and data submission requirements and/or identify areas of deficiencies and the magnitude of improvement necessary to meet the requirement.

The FSR lists specific functional requirements to meet the objectives listed above. In addition, other requirements were included in the FSR Questions and Answers, and in the SPRs for this project. The IA report



includes a matrix containing all 83 of these requirements (See IA report Attachment 3a- "Requirements Satisfaction Matrix"). This matrix describes each requirement, lists the source of the requirement, indicates if the requirement is Met or Unmet by the current MIS/DSS system, and includes a reference section to document the basis for the Met/Unmet rating. The IA findings validate that the original system requirements were materially met by the MIS/DSS. Based on the IA team's analysis, the current MIS/DSS fully meets 76 of the original 83 requirements. The remaining requirements pertain to five categories of data that the Department either does not collect, or has established other means for tracking/analyzing data in the particular category. Specifically, the unmet requirements with explanation are as follows:

1. Patient Satisfaction-The Department is required by federal regulation to measure health plans quality through an EQRO. The EQRO vendor performs the Consumer Assessment of Health Plan Survey (CAHPS®) and provides reporting and analytical support. As such, the Department does not look to the MIS/DSS to satisfy this information need.
  - 1a. 150,000 Patient Satisfaction Surveys for five percent of Enrollees-The Department does not collect this data. Consumer Assessments are provided through the EQRO vendor.
2. Timeliness of Appointments-This measure is included in the EQRO vendor reporting.
3. Financial Audit Data-The system does not contain financial audit data. There are fewer than expected financial audits of the plans so comparisons within plans or between plans over time are not practical. The system does contain the Medi-Cal Plan Benchmark Report available through the Briefing Book application. Additionally, the Department's Audits and Investigations has developed separate systems to track medical and financial audits.
  - 3.a. Quarterly Audit Records - As described above, the system does not contain financial audit data.
4. Medical Audit Data-The MIS/DSS does not specifically contain medical audit data. The system does, however, contain claims data that includes diagnosis and procedure code information. Additionally, the Department's Audits and Investigations has developed separate systems to track medical and financial audits.
5. Health Care Options (HCO) Data - While the results from the health care options processing (e.g., health plan enrollment,



enrollment status, etc.) are included in the MIS/DSS, DHS/PSD has developed a separate system to monitor the HCO contract.



## 2.2 HOW RFP OBJECTIVES WERE MET

DHS contracted with MEDSTAT to develop and implement a system that would enable the Department to meet its program objectives through specific requirements in the RFP. The enhanced technical, information capabilities that were required in the RFP represented state-of-the-art IT available at the time. Approaching eight years later, however, as detailed in the IA report, “Current View-Summary Observations”, page 42, the MIS/DSS hardware and software are at the end of its service life. Nevertheless, as is expressed by the following quote from the IA report section referenced above: “When the (MIS/DSS) system was procured in April 1997, the MEDSTAT application suite was current technology as well as the hardware required to run the application suite.”

The MIS/DSS system design is documented in the “Current View - System Design”, pages 29-30, and in Attachment 5a – “System Architecture”, of the IA report and illustrates the information contained in each of the following tables which detail how specific RFP objectives were met.

- Table 1 provides an overview of the MIS objectives defined in the MIS/DSS RFP and how each was met.
- Table 2 provides an overview of the DSS objectives and how they were met.
- Table 3 provides an overview of the Database Objectives and how they were met.



**Table 1 – MIS Objectives**

<b>Objective</b>	<b>How Objective is Met</b>
<b>Flexibility, Speed and Ease of Use</b>	<ul style="list-style-type: none"> <li>• MIS is easy for users to use with minimal training.</li> <li>• No user programming is necessary to use MIS.</li> <li>• MIS provides information in aggregate, summary, comparative, and sub-aggregated form.</li> <li>• Response times do not exceed 15 seconds.</li> <li>• MIS provides functions to allow reports to be directed to screen, printer or file.</li> </ul>
<b>Detecting and Analyzing Patterns</b>	<ul style="list-style-type: none"> <li>• MIS provides users with an array of powerful and flexible capabilities to detect, analyze and report patterns and trends.</li> <li>• MIS provides users with the ability to identify and test assumptions about Medi-Cal expenditures, utilization, program operations, outcomes, access and quality of care.</li> </ul>
<b>Multiple Views of Information</b>	<ul style="list-style-type: none"> <li>• MIS provides users with flexible, moderate drill-down capabilities and well-organized viewing options.</li> <li>• MIS provides users with the ability to view information from multiple perspectives.</li> </ul>
<b>Standard Reporting</b>	<ul style="list-style-type: none"> <li>• MIS provides year-to-date, quarterly, monthly, and annual reporting of statistical summaries by plan, and by county, which array expenditures and service data in reports.</li> </ul>
<b>Access to Information</b>	<ul style="list-style-type: none"> <li>• MIS supports interactive drill down from summary to sub-aggregated information, and roll up of details and sub-aggregate information to summary totals, as well as cross tabulations and tabular and graphical presentations of information.</li> <li>• MIS displays data by date of service.</li> </ul>



**Table 2 – DSS Objectives**

Objective	How Objective is Met
<b>Flexibility, Speed and Ease of Use</b>	<ul style="list-style-type: none"> <li>• DSS provides users with the ability to assimilate and compare aggregate and summary-level information and identify problems and opportunities.</li> <li>• DSS response times are as expected for a detailed, claim-level database and all functions are available to users on-line.</li> <li>• DSS supports inquiry and data manipulation without requiring any programming knowledge or special languages.</li> <li>• DSS allows calculation and reports comparison of data by element, or combination of elements.</li> </ul>
<b>Detecting and Analyzing Patterns</b>	<ul style="list-style-type: none"> <li>• DSS provides a sophisticated range of basic, intermediate and advanced mathematical and statistical functions.</li> <li>• DSS provides users with the ability to array and analyze time series data.</li> <li>• DSS provides access to episodic data and allows the use of statistical and pattern analysis functions on such data.</li> </ul>
<b>Advanced Modeling and Analysis Capabilities</b>	<ul style="list-style-type: none"> <li>• DSS provides hierarchical consolidation of data and drill-down capabilities for simplified and complex analysis, profiling and exception reporting of eligibles, providers, services, diagnoses, capitation payments, expenditures, billing patterns and procedures at various levels.</li> <li>• DSS provides advanced capabilities to identify, explore and analyze access, use, cost, treatment patterns, and quality of Medi-Cal funded health care using health statistical measures.</li> <li>• DSS provides advanced capabilities to link and analyze financial data with clinical data.</li> <li>• DSS provides an array of report writing capabilities to provide information, data and results on screen, in print, and in exportable files.</li> </ul>
<b>Utilization Management Capabilities</b>	<ul style="list-style-type: none"> <li>• DSS provides capabilities for the identification, analysis, and reporting of utilization management problems and opportunities, cost and use problems, and medically unnecessary or inappropriate care.</li> <li>• DSS supports linkages between designated periods of continuous eligibility and services reported for those eligibles.</li> <li>• DSS supports the ability to analyze pharmacy usage and to track drugs by eligibility category, diagnostic category, and place of service.</li> <li>• DSS allows for case-mix and age-sex adjustments.</li> <li>• DSS provides episodic reporting capabilities using inpatient, outpatient and pharmacy service data.</li> </ul>



**Table 3 – Database Objectives**

Objective	How Objective is Met
<b>Integrated and Comprehensive Database Management System (DBMS)</b>	<ul style="list-style-type: none"><li>• The integrated and comprehensive DBMS holds 30 months of historical service data at the claim and encounter level.</li><li>• The Database is scaled to accommodate up to 150 percent of the current eligibles.</li><li>• The DBMS efficiently and completely incorporates all system data, including monthly changes and additions.</li><li>• The DBMS maximizes the on-line performance, functionality, accessibility, reliability and cost effectiveness of the systems.</li><li>• The DBMS maximizes the ease of use, transparency, and seamless access to information and data through the systems.</li><li>• The DBMS ensures the validity, integrity, accuracy, consistency, completeness, timeliness and accessibility of MIS/DSS data.</li></ul>
<b>Open Relational DBMS</b>	<ul style="list-style-type: none"><li>• The DBMS is a DB2 relational database system.</li><li>• The DBMS is a relational system based on generation database language and tools.</li><li>• The DBMS is a relational system based on an open and easily adaptable architecture that maximizes timeliness, compatibility with computer industry protocols and programming efficiency.</li><li>• The DBMS is a relational system based on a graphical user interface.</li></ul>



## 2.3 PROJECT ACCOMPLISHMENTS AND BENEFITS

A major benefit of this system is that it allows the user to see Medi-Cal data from a more complete and comprehensive perspective. By including all of the State run programs in the data warehouse, a complete picture of service utilization is available. This complete data clearly delineates problems such as gaps in the service structure that can contribute to poor health outcomes and/or high costs.

Implementation of this complex system was accomplished in five phases, over a three-year period, with operational support required for an additional year. The application suite consists of both proprietary products and commercial-off-the-shelf (COTS) software. Each phase of the project required the Contractor to provide significant project deliverables. The final implementation phase of the MIS/DSS project was completed in August 2000.

The project is in Operations and Maintenance. Currently, the MIS/DSS relational, production and archive databases include approximately 2.5 billion records, making the system one of the largest of its kind. Data in the warehouse covers services provided to Medi-Cal beneficiaries in all 58 counties. The following are record counts from the rolling 30-month, production database for July 2004:

- 1,648,695 Inpatient Cases
- 29,866,356 Episodes
- 37,007,997 Inpatient Services
- 458,221,435 Outpatient Services
- 235,696,563 Prescription Drugs
- 198,267,913 Eligibility
- 13,098,187 DHS Core
- 100,697 Capitation
- 234,325 Providers
- 53,690,056 Dental Services

In addition to the production database detailed above, users have real time query access to four calendar years of records in the archive database.



Diagram 1, below, provides a view of the various types and sources of data that feed into MIS/DSS on a monthly basis.

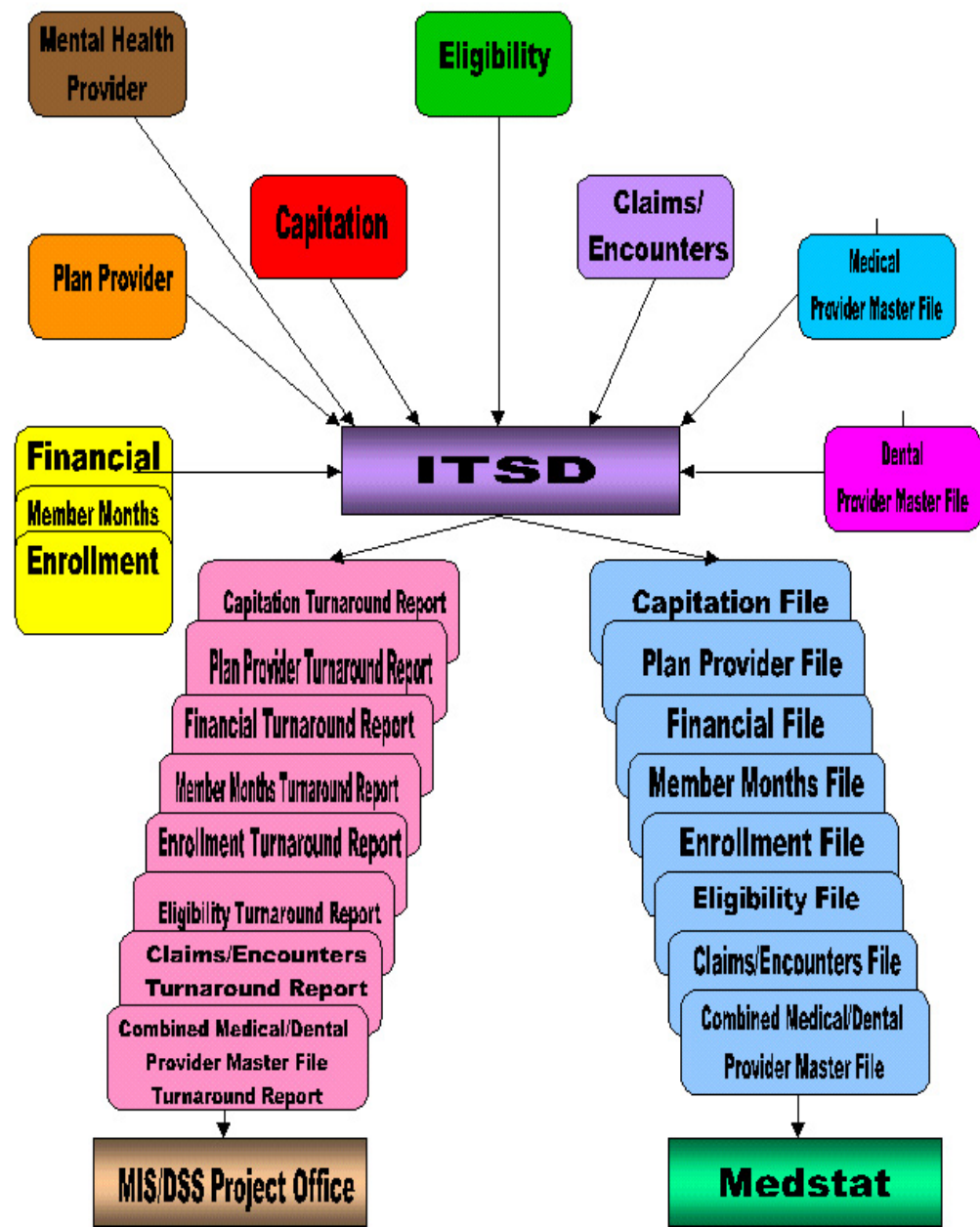


Diagram 1 – Monthly Data Feeds for MIS/DSS



The following accomplishments highlight the successes of the MIS/DSS project:

- A working Data Warehouse Tool Set is now in place.
- Currently there are 187 MIS Users and 75 DSS Users, with user demand expanding.
- Complex data sources were integrated successfully (40 different inputs, five manual, many different file formats).
- Technology is now available to access all necessary data from one source.
- The Implementation Phases were completed.
- Operations and Maintenance is in progress.

The following capabilities have been realized for the users of the MIS/DSS system:

- Research and calculate Managed Care Plan rates.
- Monitor utilization by category and type of service (e.g., drugs, immunizations, etc.).
- Monitor Managed Care Plan contract compliance.
- Estimate usage and funding for new initiatives.
- Detect and deter fraud and abuse.
- Answer legislative queries.
- Compare FFS and Managed Care utilization patterns.
- Analyze utilization by age, ethnicity, language, etc.
- Analyze expenditures by type and category of service, age, etc.
- Compare utilization patterns within and across Managed Care models.
- Analyze episodes of care for practice patterns.
- Assess beneficiary access issues based on utilization patterns and provider ratios.
- Monitor quality of care by analyzing preventive services utilization patterns.
- As a result of this project, representatives from each of the Managed Care Plans came together for an Encounter Data workgroup, with the specific purpose of improving the quality of Encounter Data going into the MIS/DSS system.



- As a result of this project, the Governor's Prescription Drug Task Force was provided with data from the MIS/DSS that measured the impact of drug cost increases and identified the types of drugs causing the increase.

There are many project success stories resulting from the successful implementation of MIS/DSS. Please refer to the IA report, "PIER Closure View - ROI Performance", pages 25-27 for a discussion of return on investment and benefits of the MIS/DSS.



## 2.4 RISK ASSESSMENT AND MITIGATION

Every large, integrated system development project the size and complexity of MIS/DSS, has proportional risk. The optimum project management position is to know where the significant risk areas are and to have plans and processes that effectively eliminate or reduce any resultant technical, schedule, and cost impacts to manageable and acceptable levels. The following quote from the IA report, "PIER Closure View - Summary", page 28, summarizes the MIS/DSS experience:

*The MIS/DSS Project had its share of common issues, risks and obstacles as any other project. By far the most troublesome aspect of this project was the completeness and cleanliness of the data coming from the various suppliers of data. Nonetheless, strong project management and commitment by the integration vendor proved to be a formula for successful delivery of the system...*

A risk management process was established for the project at the conceptual stage, which relied on a group of measures designed to mitigate risk over the life of the project, and to apply a measured response to adverse incidents as they occurred. Diagram 2 below, presents the IV&V Contractor, Logicon's, visual representation of the model used for risk analysis during the implementation of the MIS/DSS. This risk model was based on a Systems Engineering Institute risk management paradigm and adapted for use in performing risk management for the MIS/DSS system. Following are the highlights of the risk mitigation techniques that were used during the five phases of implementation:

- The first risk mitigation measure was the development and use of the Steering Committee to oversee the design, development and implementation of the system.
- The second measure was the employment of an IV&V contractor whose primary function was the oversight of the performance of both the State staff and the vendor for the system.
- The third measure was the "in-use" requirement included for all of the major pieces of software that were to be used.
- The fourth measure was the use of phases for the system implementation.
- The fifth measure ensured that the vendor's software was producing an accurate database and that query capabilities were producing accurate results, accomplished during User Acceptance Testing (UAT), using the DHS legacy systems as benchmarks.
- The sixth measure was a loss-recovery measure. The contract required a \$1 million Letter of Credit be provided to the Department,



with the Department named as the beneficiary. This insured the Department's ability to be paid if the contractor failed to perform.

- Finally, the contract required that source code and manuals for all proprietary software provided for use in the MIS/DSS system would be deposited into an escrow account.

Risk mitigation was first applied during the RFP stage, including the incorporation of risk measures into the contract itself. During implementation, the DOIT Risk Assessment Model (RAM), the Software Engineering Institute's survey process, and a continuous risk identification process for members of the project staff and contractors were used.



Diagram 2 – Risk Assessment Model

- **IDENTIFY:** Search and locate risks before they materialize.
- **ANALYZE:** Process risk data into decision-making information. Determine impact, likelihood, and timeframe.
- **PLAN:** Translate risk information into decisions and actions (mitigations).
- **IMPLEMENT:** Execute decisions and mitigation actions.
- **TRACK/CONTROL:** Monitor risk indicators and mitigation actions. Correct for deviations from planned risk actions.
- **COMMUNICATE:** Information and feedback throughout all risk management functions.



## 2.5 THE FIVE PHASES OF IMPLEMENTATION

Phase 1 began April 17, 1997. During Phase 1, the hardware and software for MIS/DSS were assembled. MEDSTAT established a client/server environment and built a database of Sacramento County data. The data included both FFS claims and managed care encounter records, as well as eligibility, provider, claims and other ancillary files. Throughout Phase 1, improvements were implemented in development, testing and change management practices.

During this phase, a major data delivery problem caused by a lack of communication between ITSD and MEDSTAT, resulted in a four-week project delay. The problem was ultimately resolved through the redefinition of the process of data exchange.

As risks were identified for Phase 1, mitigation techniques were developed to resolve them. The Project Office conducted UAT and a Corrective Action Plan (CAP) was developed. Phase 1 was approved on January 13, 1998, after CAP items were addressed and resolved.

Primary goals for Phase 1 consisted of the following components:

- Capture project requirements.
- Create a client/server test environment for qualification of the application suite.
- Establish databases needed for MIS and DSS.
- Design the MIS/DSS system.
- Initiate the first UAT routines.

**Table 4 – Phase 1 Risks**

<b>Risks Identified in Phase 1</b>	<b>Mitigation Techniques Used</b>
Data Delivery procedures were not well defined	Data exchange process was defined in detail during this phase to specify who had responsibility for data delivery.
Data extract process not well defined	Written specifications were finalized for ITSD in Phase 3 to define the mechanics of the data extract process.
Manual input and manipulation of data	This is an ongoing problem due to manual data sources: Capitation Payment, Managed Care Financials, Managed Care Providers, Member Months and Enrollment.
Software integration difficulties	MEDSTAT performed System Testing to work out COTS software integration difficulties. While this was a great improvement to the process, it has not resolved all of the COTS integration difficulties experienced by the program.
Vendor had no Quality Assurance Plan	MEDSTAT created a Quality Assurance Plan and put it into action toward the end of Phase 1.



Phase 2 began on November 13, 1997, and resulted in the first production database. During this phase, the Aid to Families with Dependent Children (AFDC)/Temporary Assistance to Needy Families (TANF) aid code data for 47 counties was added to the database. One of the largest successes of Phase 2 was MEDSTAT's improved testing practices. Throughout Phase 2, significant improvements in development, test and change management practices were implemented.

The Project Office conducted UAT and approved Phase 2 on June 24, 1998, after CAP items were addressed and resolved.

Primary goals of Phase 2 consisted of the following components:

- Refine data exchange between MEDSTAT and ITSD.
- Define a Change Management Process.
- Expand the amount and types of data collected.
- Establish a production database for limited "live" use.
- Install MEDSTAT's application suite in other DHS offices.

**Table 5 – Phase 2 Risks**

<b>Risks Identified in Phase 2</b>	<b>Mitigation Techniques Used</b>
Formal Change Control Process not defined	A formal Change Management process was developed and implemented during Phase 2.
Data Content/Accuracy	Data management meetings were held and issues were formally addressed.
High Panorama View error rate	MEDSTAT modified error handling and developed clearer error messages.
ITSD Data Feeds / Duplicate Encounter Data	While this problem was first found in Phase 2, it was not completely resolved until Phase 3. See Phase 3 for details about this problem and how it was resolved.
Lack of Configuration Management	An ongoing problem throughout the first three implementation phases. (See Phases 3 and 4 for mitigation)
Response Time/Capacity Planning	Performance objectives were established and the system was tested in Phase 4.
Organizational Use and Acceptance / Database Roll-Out	There was an organizational use and acceptance issue at the time of roll out, as not enough attention had been focused on preparing potential system users. Actions to improve system acceptance were developed and evaluated. Implementation of most of these was initiated in Phase 3, and continues.

Phase 3 began on March 11, 1998. By Phase 3, the production database included AFDC/TANF data for 56 counties (including Los Angeles and San Bernardino Counties). Medically Needy/Medically Indigent (MN/MI) and Supplemental Security Income/State



Supplemental Payment (SSI/SSP) aid code data for Napa, San Mateo, Santa Barbara, and Solano Counties were also included in the database. The database size increased to about 50 percent of the designed capacity.

A major problem with duplication of Encounter Data occurred during Phase 2 that caused a 13-week project delay. Because the problem was not fixed until Phase 3, the delay was assigned to Phase 3. The problem was caused by ITSD processing errors in sending data twice. As a result, new ITSD processes were developed and put into place to reduce the chances of this problem being repeated. Additionally, MEDSTAT executed a limited de-duplication process to identify and remove the duplicate records from the database.

The Project Office conducted UAT and approved the completion of Phase 3 on April 5, 1999, after CAP items were addressed and resolved.

MEDSTAT made significant improvements in Phase 3 and continued to express a strong commitment to improvements in the project. Both MEDSTAT's commitment and their performance provided a strong reduction in project risk for DHS.

**Table 6 – Phase 3 Risks**

<b>Risks Identified for Phase 3</b>	<b>Mitigation Techniques Used</b>
Data Content/Accuracy	Logicon conducted a data walkthrough and documented the data flow.
Configuration Management issues	MEDSTAT committed to completing an evaluation of improvements to their configuration management processes.
ITSD Data Feeds / Duplicate Encounter Data	New ITSD processes were developed and put into place. A de-duplication process was also implemented.
Response Time/Capacity Planning	Volume and stress planning were applied and test plans were developed.
Organizational Use and Acceptance/ Database Roll-Out	Manager Overview Meetings were initiated which focused on MIS/DSS support of each division's needs. Additionally, monthly User Group Meetings were initiated, and a Software Roll Out Plan was developed.
Year 2000 (Y2K)	MEDSTAT's Ann Arbor and Sacramento offices conducted Y2K remediation and testing. There were no Y2K issues.



Phase 4 began on January 1, 1999. During Phase 4, the Medically Needy (MN), Medically Indigent (MI) and Supplemental Security Income (SSI)/State Supplemental Payment (SSP) aid code data for Los Angeles County were added to the MIS/DSS database. The Project Office conducted UAT and approved the completion of Phase 4 on November 29, 1999, after CAP items were addressed and resolved. Improvements made by MEDSTAT in Phase 4 greatly furthered the success of the project. MEDSTAT supported the Risk Management process and participated fully in the activities designed to identify and mitigate project risks. Furthermore, MEDSTAT was supportive of a number of efforts aimed at mitigating risks associated with organizational use and acceptance of the MIS/DSS system. They developed a user outreach program, fostered monthly user group meetings, and provided analytical support for DHS business reporting needs. This was a significant step forward in gaining user acceptance and meeting the Department's business needs through MIS/DSS.

**Table 7 – Phase 4 Risks**

<b>Risks Identified</b>	<b>Mitigation Techniques Used</b>
System Growth Management	The concern about whether there would be enough CPU to perform monthly updates was addressed via monthly Dashboard Reports that informed the State about response times, DASD usage, how long updates took, etc. Capacity and performance growth were also controlled as a result of active monitoring through volume and stress testing processes implemented during this phase.
Configuration Management	Elevated to a Conditional Acceptance item and later approved after MEDSTAT addressed the problem.
Key Staff Dependence	Elevated to Conditional Acceptance item, later approved after problems addressed.
Backup Performance	Elevated to a Conditional Acceptance item and later approved after MEDSTAT addressed the problem.
Coordination with Ann Arbor not defined	Elevated to a Conditional Acceptance item and later approved after MEDSTAT addressed the problem.
Organizational Use and Acceptance	Outreach program established to elevate awareness of and use of MIS/DSS system.
Data Ownership and Control within DHS	An ongoing issue, data sources/flow, was documented by Logicon that helped clarify edits and processes performed upstream of the MIS/DSS conversion processes.
Testing Strategies not defined	A Project Work Group defined volume and stress testing processes, and testing was successfully completed.

Phase 5, the final phase of implementation, was begun on July 2, 1999. In this phase, all data for the remaining counties (Orange and Santa Cruz) and Medicare/Medi-Cal claims data (crossover claims)



for all counties were added to the data warehouse. Phase 5 was successfully completed and conditionally approved by DHS on August 3, 2000. After implementation and validation of corrective actions to address areas of concern remaining after Phase 5 UAT, final approval of Phase 5 was granted October 26, 2000.

**Table 8 – Phase 5 Risks**

Risk Identified	Mitigation Technique
<b>Performance and Capacity –</b> System performance requirements must be met on each of the computing platforms (NT and Mainframe), including User Performance and Database Build Performance.	Performance objectives were established. Phase 4 was tested against performance objectives. There was sufficient capacity to complete monthly updates and query response times met objectives. Monthly dashboard metrics were developed. Phase 5 performances did not appear to be a crisis, but risk is still present. Ongoing system tuning performed with HHSDC and IBM assistance.
<b>Security Management –</b> The system is composed of many assets that could be impacted by various threats. These assets must be protected through appropriate application of threat controls to avoid significant financial and other forms of impact.	An analysis of internal/external risks to the MIS/DSS database was conducted during Phase 5, and ITSD was tasked by Steering Committee to coordinate DHS actions related to Security recommendations. An Action Plan for Security Risk mitigation was begun in November 2000. A major component of this Plan was the encryption of confidential fields on the database to limit and control access to this data. The database encryption was completed in June 2001. A joint Security Committee was established to continually monitor access and other security aspects of the system.
<b>Operational Readiness –</b> Stability of processes, people and technology in “Production” is critical to predictable and reliable production performance. Previous phase reviews identified shortfalls in Operational Readiness that required significant attention in both Phases 5 and 6.	Out of the Operational Readiness forums held at the end of Phase 5, two patterns emerged as the primary reasons for failures/errors in the monthly update process: (1) Failures/errors from prior update cycle repeated, and (2) System changes implemented during the monthly update process. To mitigate these situations, new, ongoing joint Post Mortem and Pre-Release meetings were initiated, which included MEDSTAT, DHS Project Office, ITSD, and Logicon representatives. The focus of the meetings was to analyze and correct any issues/errors that occurred during the previous month’s update so that they would not be repeated in the upcoming update process, and to ensure that any changes planned for an upcoming update were properly scoped, planned, coded, and tested. Post Mortem/Pre-Release meetings were held after the completion of the monthly update, and prior to the initiation of the next month’s updates processing.
<b>Data Quality Improvement –</b>	Data stream analyses and independent



Risk Identified	Mitigation Technique
There is a recognized need to encourage and monitor the quality of the data submitted, especially managed care encounters.	assessments were conducted via a data quality Initiative. An Encounter Data Workgroup produced recommendations. The first phase of implementation of those recommendations was completed April 2001. The remainder of those recommendations will be implemented as funding becomes available.
<b>Organizational Use and Acceptance -</b> As with any new system, there has been resistance to system acceptance and usage within DHS.	A systematic approach to overcome acceptance and use hurdles is required to allow the State to realize the full potential and value of the system. The following initiatives were implemented to mediate this problem: (1) MEDSTAT developed and conducted Manager's Overview and Analytic agenda sessions for primary DHS users, i.e., MMCD, PSD, MCPD and A&I; (2) Monthly end-user group meetings are held at the Project Office; (3) Telephone and in-person analytic support is available; (4) MEDSTAT tracks statistics on actual usage.

Phase 6 is the Operations and Maintenance Phase of MIS/DSS.

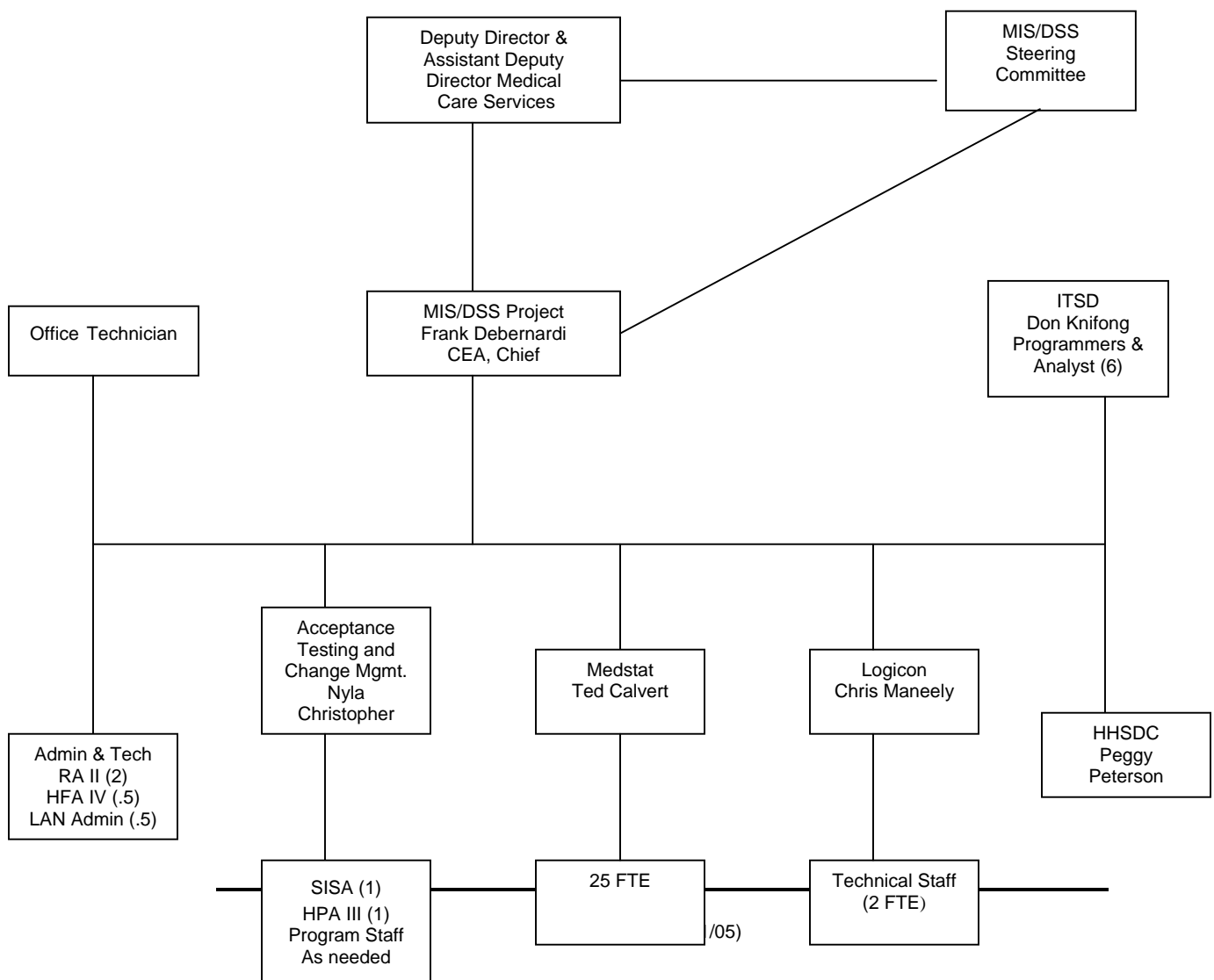


## 2.6 PROJECT ORGANIZATION AND STAFFING

The MIS/DSS project was organized outside of the normal divisional structure of the Medi-Cal Program, the Project Manager reported directly to the Deputy Director of the Medical Care Services (MCS) program. This was done to ensure success, away from constant priority problems associated with a large operating program such as Medi-Cal.

In May 2003, the MIS/DSS Project was designated the MIS/DSS Section, and was moved to MCS, PSD -Office of Medi-Cal Payment Systems (OMPS). Diagram 3 below, depicts project staffing from initiation through development and implementation. During this time, the MIS/DSS Project was staffed with various state staff, primary contractor staff, and IV&V staff.

**Diagram 3 – Project Organization Chart**





## 2.7 STAFF AND MANAGEMENT USAGE/ACCEPTANCE

The MIS/DSS has broad capability and impact both inside and outside of DHS. However, a full spectrum of human and organizational resistance has been encountered, coupled with organizational support problems, and difficulties with data ownership. There has been some resistance to change in the user community, especially in organizations that rely exclusively on FFS data. A systematic approach to overcoming these acceptance issues and use hurdles remains in order to allow the State to realize the full potential and value of the MIS/DSS system. See the IA report, “Executive Summary”, page 2, and “Current View”, pages 31- 41 for assessment findings related to the highly polarized views of DHS staff about this system.

In early phases of the project, the risk of low organizational use and acceptance of the MIS/DSS system was identified. During these phases, MEDSTAT was supportive of a number of efforts aimed at this risk. They developed a “user outreach” program, fostered monthly user group meetings, and provided analytical support for DHS’ business reporting needs. MEDSTAT was also supportive of a broader effort aimed at mitigating the Organizational Acceptance and the Use risks in Phase 5 and beyond. They were motivated to ensure that the Department realized the maximum benefit from the MIS/DSS system.

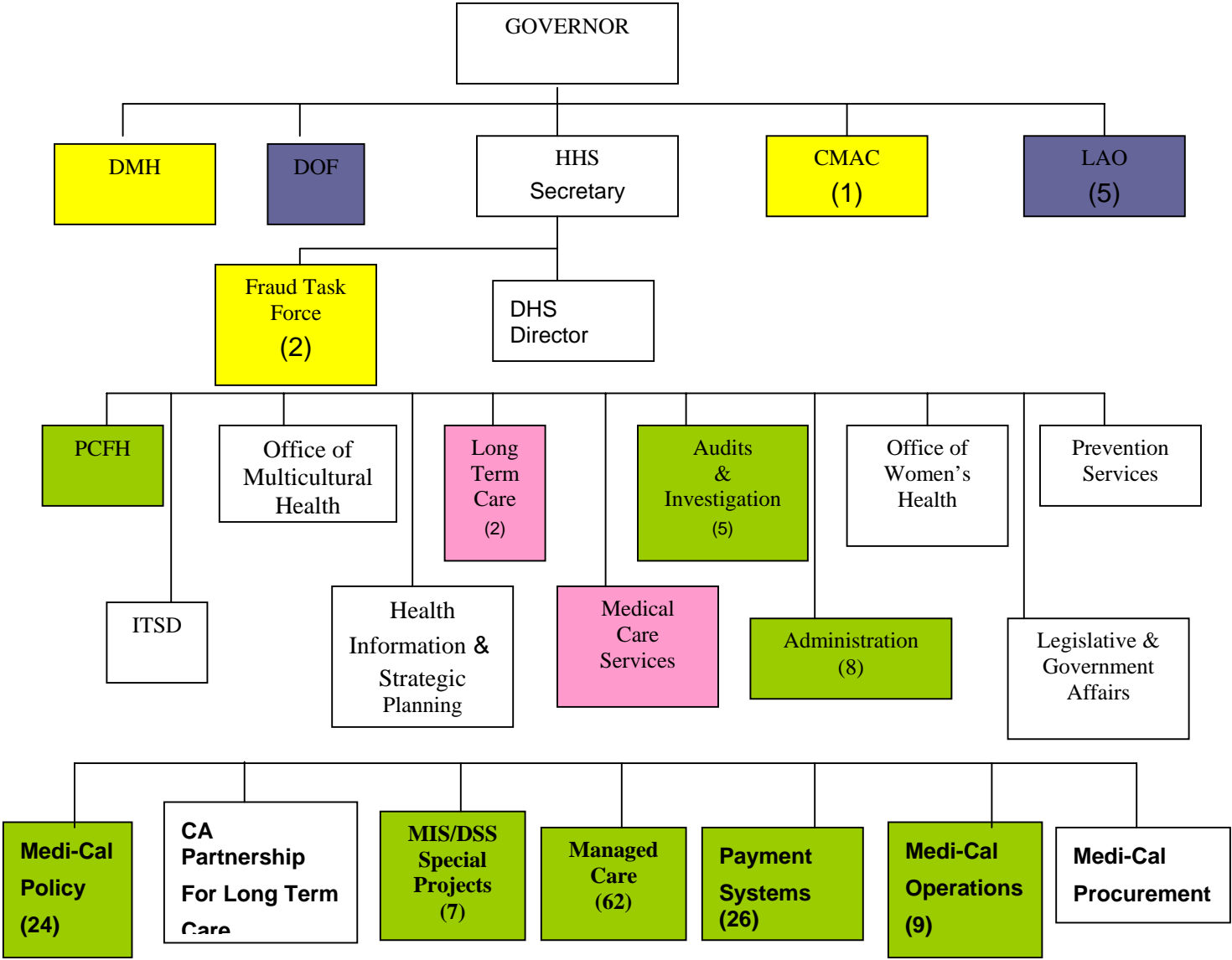
System usage has increased in both the number of users, and the breadth of program areas using the MIS/DSS; however, there is untapped potential for other uses of the MIS/DSS in Medi-Cal Program operations.

Outside DHS, acceptance of the MIS/DSS system was positive. Other departments such as Department of Mental Health, Department of Social Services, the LAO, DOF, and the legislative committees, were all able to access Medi-Cal data from one source, the MIS/DSS.

The IA report’s “Current View” , pages 29-58, and Attachment 4 – “Business Assessment Detail” focus on current use of the MIS/DSS and its potential in DHS.



Diagram 4 – Current MIS/DSS Usage





## 2.8 PROJECT SCHEDULE

The projected and actual completion dates for the project's phases, as well as the duration of each phase are displayed below in Table 9. The project had two schedule delays:

- 1) To allow for the correction and inclusion of data as required for Phase 1, and
- 2) A problem with duplicate Encounter data in Phase 3.

The two primary causes for delay are discussed in more detail in Section 2.5, the Five Phases of Implementation. The contract also needed to be extended for the IV&V contractor in order to match the additional time added to the project schedule.

The five phases of implementation took a total of 167 weeks, which is 15.7 percent above the 144 weeks planned. Turnover to users occurred on July 27, 2000, and received final approval October 26, 2000.

The findings from the IA validate that: "The ultimate performance goal was missed by roughly three business weeks over the life of a project that spanned more than three years." The IA Team concluded that: "This should be considered very good performance to overall schedule goals." (See IA report, "PIER Closure View- Schedule Performance", pages 21-23)



**Table 9 – Project Schedule Planned versus Actual**

ID	Task Name	Dur	Bas Sta	Bas Fin	Act Sta	Act Fin	1997		1998		1999		2000	
							H1	H2	H1	H2	H1	H2	H1	H2
1	Big Picture	166.6 w	4/17/97	7/7/00	4/17/97	7/27/00								
2	Phase 1	38.8 w	4/17/97	1/12/98	4/17/97	1/13/98								
3	RFP+	30 w	4/17/97	11/12/97	4/17/97	11/6/97								
4	Baseline	26 w	4/17/97	10/15/97	4/17/97	10/15/97								
5	Four week delay	4 w	10/16/97	11/12/97	10/16/97	11/6/97								
6	Phase 1 Start:Accept	194 d	4/17/97	1/12/98	4/17/97	1/13/98								
7	Phase 2	25.6 w	11/12/97	6/24/98	11/7/97	6/24/98								
8	RFP+	17 w	11/13/97	3/11/98	11/7/97	3/12/98								
9	Baseline	17 w	11/13/97	3/11/98	11/7/97	3/12/98								
10	Phase 2 Start:Accept	160 d	11/13/97	6/24/98	11/13/97	6/24/98								
11	Phase 3	47.8 w	3/11/98	2/8/99	3/11/98	4/5/99								
12	RFP+	42 w	3/13/98	12/31/98	3/13/98	1/10/99								
13	Baseline	29 w	3/12/98	9/30/98	3/13/98	9/30/98								
14	13wk 1 day delay	13.2 w	10/1/98	12/31/98	10/1/98	1/10/99								
15	Phase 3 Start:Accept	239 d	3/12/98	2/8/99	3/11/98	4/5/99								
16	Phase 4	37.8 w	1/1/99	9/8/99	1/1/99	11/29/99								
17	RFP+	26 w	1/1/99	7/1/99	1/1/99	7/12/99								
18	Baseline (26w)	26 w	1/1/99	7/1/99	1/1/99	7/12/99								
19	Phase 4 Start:Accept	177 d	1/1/99	9/8/99	1/1/99	11/29/99								
20	Phase 5	51.4 w	7/2/99	7/7/00	7/2/99	7/27/00								
21	RFP+	42 w	7/2/99	4/21/00	7/2/99	7/17/00								
22	Baseline (42w)	42 w	7/2/99	4/21/00	7/2/99	7/17/00								
23	Phase 5 Start:Accept	51.4 w	7/2/99	7/7/00	7/2/99	7/27/00								

## 2.9 PROJECT COSTS

This section provides the project's financial data by comparing the original projected and budgeted program costs against actual costs. For additional information and details, see the IA report "PIER Closure View- Cost Summary", pages 23-25, and Attachment 3b – "Cost Detail".

The FSR for the project had estimated costs of \$12,258,000 for the Managed Care Data System only. The first SPR in 1995 significantly expanded the scope of the project to include all of the FFS data, as well as data from other departments utilizing Medi-Cal funding.

The second SPR in December 1996 estimated the total project cost based on the final accepted bid for the complete system at \$40,981,610. The third SPR in May 1999 increased the total estimated project costs to \$44,079,000 (Note: This figure does not include \$2,528,680 in ongoing existing program costs).

Reasons for project cost increases were varied. Some of the cost increases could not have been foreseen, others were the result of



changes and problem resolution. Following are highlights of the reasons for cost increases:

- Problems identified in Phase 1 of the project (i.e., data-feed errors, increased project costs by \$600,000).
- Problems identified in Phase 2 and corrected in Phase 3 of the project (i.e., duplicate Encounter Data increased project costs by \$626,000).
- Programmatic changes, including new aid codes and programs, were implemented at a cost of \$1,162,387 over the four-year life of the contract.
- HHSDC costs increased significantly (\$1,566,609, annually).
- The IV&V contract needed to be extended due to schedule changes, at a cost of \$2,310,583.00, which was spread over the life of project development.

Data quality problems occurred, which were related to the size of the database and the large number of independent sources. This resulted in the need to develop and implement an ongoing duplicate check process and Statistical Process Control (SPC) data/reports about the quality and completeness of the data. Two contractors developed these processes: IBM (duplicate check process) and Cordoba (SPC report design), at a cost of \$650,000. Despite these cost increases, as is detailed in the IA findings referenced above, the MIS/DSS project was successfully implemented at a total project cost of \$43,979,992, \$99,000 under the approved budget.

### **Ongoing Operations/Maintenance Costs**

On April 18, 2001, a three-year extension of the MEDSTAT contract was executed as authorized in the original contract. During this operations and maintenance period, the database update process will remain in place. This process provides for ITSD to process the input files from various submitters, and to generate the data feeds which MEDSTAT uses to complete the monthly update of the MIS/DSS system.

On April 22, 2004, a Non-Competitive Bid (NCB) contract extension was approved and executed with MEDSTAT to allow continued access and benefit from the MIS/DSS while DHS: (1) Obtains a qualified vendor to conduct the independent assessment of the MIS/DSS required by DOF, and (2) Completes a competitive procurement for a new contract for the transfer and enhancement of the MIS/DSS. All previous contract provisions remained in place and an additional Health Insurance Portability and Accountability Act (HIPAA) Rider was



added. The contract rate negotiated in the April 2001 extension remained in place. See IA report, Attachment 3b "Cost Detail".

See Attachment B for the PIER Economic Analysis Worksheets.



### 3 Lessons Learned

#### SPECIAL OBSERVATIONS

This section provides an overview of processes that led to the success of the project; lessons learned during the life of the project; as well as DHS recommendations for other projects as they begin their life cycles.

The overall success of the MIS/DSS project was due in large part to the phased-in approach employed during project development. Attempting to manage the large, diverse volumes of data; the many variables associated with a dynamic, complex program; and the risks that plague large IT projects simultaneously in one implementation would very likely have led to significant, even fatal, problems in the development of this project.

A second significant reason for the success of the project was the early implementation of a risk assessment and mitigation process.

Being prepared for problems as they arose gave DHS an extra edge in preventing excessive project costs or schedule overages. As part of each phase, risks to the success of the project were identified as a result of activities that occurred during the phases. The risk management process employed during the project development phase is described in detail in Section 2.4 of this report.

A third major reason for the success of the project was the implementation of UAT procedures, first employed in Phase 1. The MIS/DSS project office conducted a six-week UAT process following System Testing for each of the five phases. The testing was performed by a small to medium group of 6-20 members made up of project office staff, as well as users from various DHS divisions. UAT results were forwarded to MEDSTAT who was responsible for developing and implementing a Corrective Action Plan prior to phase approval. While this process was conducted under controlled conditions, it provided an orientation and initial exposure to the functionality and capabilities of the system for departmental users. This experience led to the development of “power users” and resource staff in various divisions or branches throughout the Department. User acceptance testing provided the foundation for later acceptance of the MIS/DSS system by the user community.

The most critical lessons learned during the life cycle of this project are as follows:

#### **COTS Integration Management –**

- A COTS integration, purchased with the intention of controlling new development risks, contained its own set of risks.



- The complexity of the software product integration process was underestimated. For example, using COTS products in new ways or for purposes for which they were not specifically designed may have led to unforeseen problems. Such is the case with My Eureka! Report Server, one of the COTS products in the MIS/DSS suite. The Report Server has continued to present integration and communication problems for the MIS/DSS. Workarounds have been put in place; however, work continues in an attempt to isolate and correct the root cause of these problems.

#### **Project Funding Management –**

- The need for contingency funding or management reserve was required to address contract delays arising in two areas of the implementation:
- Delays in getting the data to the contractor in the approved format.
- Delays from the unanticipated requirement to clean up duplicate data provided to the contractor.

#### **Risk Management –**

- The MIS/DSS project was put at risk due to the project not having project-specific criticality, and risk assessment and mitigation procedures in place at the beginning of the project that included input from all stakeholders.
- The project's development and implementation of a project-specific risk management process that included participation by all project stakeholders in Phase 2, was critical to the success of the project.

#### **Change Management –**

- The value of a formal change management process was not recognized early in the project's lifecycle.
- Change management should have been planned from project conception through operations and maintenance.
- The development and implementation of a formal change management process in Phase 2 was critical to the success of the project.

#### **Teamwork –**

- The duration and size of project hurdles could have been more easily surmounted by effective teamwork; but becoming a team was a difficult challenge in the early stages of the project and required constant effort and monitoring.

#### **User Focus –**



- Organizational change management (i.e., organizational use and acceptance issues) should have been planned and funded from project conception to operations and maintenance.
- The technical solution for MIS/DSS consumed most of the effort and time in the beginning of the project.
- The project suffered from a lack of user understanding because users were not properly prepared for the benefits and capabilities of the new system and the organizational and business process changes required to tap the potential of a decision support system.



## Addendum - Acronym Glossary

Acronym	Spelled Out
AFDC	Aid to Families with Dependent Children
A&I	Audits and Investigations
CAP	Corrective Action Plan
CMAC	California Medical Assistance Commission
COTS	“Commercial off-the-Shelf” software
DBMS	Database Management System
DHS	Department of Health Services
DMH	Department of Mental Health
DOIT	Department of Information Technology
DSB	DHS’ Data Systems Branch – now called ITSD
DSS	Decision Support System
FFS	Fee-for-Service
HEDIS	Health Plan Employer Data and Information Set
HHSA	Health and Human Services Agency
IEEE	Institute of Electrical and Electronics Engineers
ITSD	DHS’ Information Technology Services Division
IV&V	Independent Verification and Validation Contractor
IT	Information Technology
LAO	Legislative Analyst’s Office
LTC	Long Term Care
MC	Managed Care
MIS	Management Information System
MN/MI	Medically Needy / Medically Indigent
PCFH	Primary Care and Family Health
PIER	Post Implementation Evaluation Report
PMW	Performance Measurement Workstation (HEDIS)
RAM	Risk Assessment Model
RFP	Request for Proposal
SSI/SSP	Supplemental Security Income/State Supplemental Payment
SQL	Structured Query Language
TANF	Temporary Assistance for Needy Families (formerly AFDC)
UAT	User Acceptance Testing



## Attachment A

- July 18, 2003 Letter from Department of Finance  
RE: Post Implementation Evaluation Report for the Department of  
Health Services Management Information System/Decision Support  
System (Project Number 4260-138)



## Attachment B

- PIER Economic Analysis Worksheets  
Dated: February 1, 2005



## Attachment C

- MIS/DSS Independent Assessment Report  
Issued: August 11, 2004